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Reply to Office Action of 10/13/2005

AMENDMENTS TO THE SPECIFICATION

Please delete the section entitled "CROSS-REFRERNCE TO RELATED APPLICATIONS" in its entirety and substitute the following section therefor:

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application is related to the following co-pending U.S. Patent Applications, all of the applications having a common assignee, common inventors, and filed on the same day as this application.

SERIAL NUMBER	DOCKET NUMBER	TITLE
09/849168———————	DT:0101	APPARATUS FOR MERCHANDISE PRICE OPTIMIZATION
09/741958———————	DEM1P006	SYSTEM FOR CREATING OPTIMIZED PROMOTION EVENT CALENDAR

Please delete the section entitled "SUMMARY OF THE INVENTION" in its entirety and substitute the following section therefor:

SUMMARY OF THE INVENTION

[0012] The present invention provides a superior technique for determining an optimum promotion strategy for products within a product category. Contrasted with present day optimization systems that consider only gross figures in their respective optimizations, promotion plans according to the present invention can be optimized to maximize merchandising figures of merit (e.g., net profit) that take into account demand chain costs associated with the products.

[0013] In one embodiment, an apparatus is provided for determining an optimum promotion plan for merchandising of products for sale. The apparatus has a scenario/results processor, a demand engine, an activity based cost engine, and a promotion optimization engine. The scenario/results processor enables a user to prescribe an optimization scenario, and presents the optimum promotion plan to the user,

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where the optimum promotion plan is determined by execution of the optimization scenario. The demand engine is coupled to the scenario/results processor. The demand engine models relationships between potential prices of the products and market demand for the products, where the potential prices correspond to potential promotion events and potential supplier offers. The activity based cost engine is coupled to the demand engine. The activity based cost engine estimates demand chain costs for the products based upon the market demand, where the demand chain costs include fixed and variable costs for the products for sale. The promotion optimization engine is coupled to the demand engine and the activity based cost engine. The promotion optimization engine employs the market demand and the demand chain costs to determine the optimum promotion plan, where the optimum promotion plan maximizes a merchandising performance figure of merit according to the optimization scenario, and where the optimum promotion plan comprises a subset of the promotion events and potential supplier offers.

[0014] One aspect of the present invention features a method for optimizing a promotion plan for merchandising products. The method includes utilizing a computer-based scenario/results processor within an optimization server to present a sequence of data entry templates to a user, whereby the user specifies an optimization scenario; within the optimization server, modeling the relationship between potential prices of the products and market demand for the products, where the potential prices correspond to potential promotion events and potential supplier offers; within the optimization server, estimating demand chain costs for the products according to the modeled market demand, wherein the demand chain costs include fixed and variable costs for the products; within the optimization server, employing the market demand and the demand chain costs to determine optimum promotion events and optimum supplier offers, where the optimum promotion events and optimum supplier offers maximize a merchandising performance figure of merit according to the optimization scenario; and generating a plurality of optimization results templates and providing these templates to the user, where the optimum promotion events and optimum supplier offers are presented.

[0015] Another aspect of the present invention contemplates a method for generating an optimum promotion plan, where the optimized promotion plan correspond to a set of

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products, a set of promotion events, and a set of supplier offers. The method includes, within a centralized data base, storing product attribute and sales history data for a plurality of stores, where the product attribute and sales history data corresponds to the set of products; first employing a web server to allow a plurality of supplier computers to prescribe the supplier offers; second employing a web server to provide a user computer with a plurality of scenario/result web pages, the plurality of scenario/result web pages enabling a user to prescribe the promotion events and constraints for generating the optimum promotion plan, wherein the user computer executes a thin web client to access the scenario/result web pages; and determining the optimum promotion plan to maximize either net profit, revenue, or volume, wherein the determining uses both modeled market demand and estimated demand chain costs corresponding to the set of products_and where the estimated demand chain costs include fixed and variable costs corresponding to the set of products.

Please replace paragraphs [0052] through [0054] with the following amended paragraphs:

[0052] The demand engine 236 uses the data from the client data set 239 to estimate coefficients that may be used in an equation to predict consumer demand. In a preferred embodiment of the invention, sales for a demand group (S) is calculated, and a market share (F) for a particular product is calculated, so that demand (D) for a particular product is estimated by $D = S \cdot F$. A complete description of the statistical modeling and optimization techniques used within the demand engine 236 for a promotion plan optimization embodiment is found in co-pending U.S. Patent Application Serial Number 09/741958 --------------(Docket DEM1P006) entitled, *System for Creating Optimized Promotion Event Calendar*, which is herein incorporated by reference.

[0053] The activity based cost engine 235 employs data from the client data set 239 (supplied through the optimization engine 234), industry standard average data for calculating activity based costs from the ABC standards data base 237, and may also receive imputed variables (such as baseline sales and baseline prices) and data from the demand engine 236 (via the optimization engine 234) to calculate fixed and variable costs for the sale of each product. Like the demand engine 236, a detailed description of the

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activity based cost engine 235 for a promotion plan optimization embodiment is provided in co-pending U.S. Patent Application Serial Number 09/741958 ————————(Docket DEM1P006) entitled, *System for Creating Optimized Promotion Event Calendar.* Examples of the types of activity based costs for products that are calculated by the activity based cost engine 235 include bag costs, checkout labor costs, distribution center inventory costs, invoicing costs, transportation costs, and receiving and stocking costs.

[0054] The optimization engine 234 executes the optimization scenario that clients configure using the scenario/results processor 233. Using estimated sales and market share data provided by the demand engine 236, along with fixed and variable activity based costs calculated by the activity based cost engine 235, in a price optimization embodiment, the optimization engine 234 determines optimum prices for selected products within one or more demand groups across a product category as constrained by rules and constraints provided by clients. Some of the rules/constraints set by the client include constraints to the types, brands, or sizes of products to be promoted, selection of certain supplier offers for consideration, selection of stores for participation in a promotion event, forward buy methodologies, and constraints for merchandising figures of merit such as minimum turnover or minimum gross profit. Example options for figure of merit selection in a promotion plan optimization embodiment include net profit, volume, and revenue. Like the demand engine 236 and the activity based cost engine 235, the statistical modeling and optimization techniques that are employed by a promotion plan optimization embodiment according to the present invention are provided in co-pending U.S. Patent Application Serial Number 09/741958 ————————(Docket DEM1P006) entitled, *System for Creating Optimized Promotion Event Calendar.*

Please replace paragraphs [0047] through [0048] with the following amended paragraphs:

[0047] Now referring to FIGURE 2, a block diagram 200 is presented illustrating an apparatus for merchandise promotion plan optimization according to the present invention. The block diagram 200 shows an optimization network operations center (NOC) 230 that is accessed over a data network 220 by a plurality of off-site computers 210 belonging to a plurality of customers 201 and a plurality of suppliers 202. In one

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embodiment, the data network 220 is the Internet 220 and the off-site computers 210 are executing a Transport Control Protocol (TCP)/Internet Protocol (IP)-based thin web client application 211 such as ~~Microsoft~~MICROSOFT® ~~Internet-Explorer~~INTERNET EXPLORER® or ~~Netscape~~NETSCAPE® ~~Navigator~~NAVIGATOR®. In an alternative embodiment, the computers 210 execute an additional client application for executing distributed applications such as ~~Citrix~~CITRIX® ICA® Client 211. The optimization NOC 230 has a firewall 231 through which data network packets enter/exit the NOC 230. The firewall 231 is coupled to a web server 232. The web server 232 provides front-end services for a scenario/results processor 233. The scenario/results processor 233 is coupled to an optimization engine 234. The optimization engine 234 interconnects to an activity based cost engine 235, a demand engine 236, an activity based cost (ABC) standards data base 237, and a customer data base 238. The customer data base 238 provides storage for data sets 239 corresponding to a plurality of customers.

[0048] In operation, each of the customers maintains a protected data set 239 within the customer data base 238. Point of sale data is uploaded over the data network 220 from files on the customer computers 210 at the customer sites 201 into corresponding data sets 239 within the data base 238 and supplier offers are uploaded into the data sets 239 from supplier computers 210 at the supplier sites 202. The scenario/results processor 233 controls the timing and sequence of customer/supplier activities for uploading data, configuring optimization scenarios, setting rules and constraints, and downloading optimization results for display on the client computers 210 at the client sites 201. In one embodiment, the scenario/results processor 233 builds Hypertext Markup Language (HTML) web pages for transmittal over the data network 220 to the clients 210 at both sites 201, 202. In an alternative embodiment, the scenario/results processor 233 builds Extensible Markup Language (XML) pages for distribution to the clients 210 at both sites 201, 202. ~~In a Java~~In a JAVA®-based embodiment, the scenario/results processor 233 builds, processes, and distributes ~~Java applets~~JAVA applets to the clients 210 at both sites 201, 202.

Please replace paragraphs [0057], [0059], and [0092] with the following amended paragraphs:

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[0057] In operation, the optimization management logic 302 interprets an optimization scenario configured by a user to direct the retrieval and/or upload of data from the client computer, and the receipt of customer data from the demand engine and ABC standards data from the ABC engine in accordance with the type of optimization that is being performed. The price optimization tool 304 is employed to determine a set of optimum prices for products of a product category comprising a plurality of demand groups. The promotion optimization tool 306 is employed to determine an optimum promotion strategy for products of a product category comprising a plurality of demand groups. The space tool 308 is employed to determine an optimum placement strategy within stores for products of a product category comprising a plurality of demand groups. The logistics tool 310 is employed to determine an optimum inventory strategy within stores for products of a product category comprising a plurality of demand groups. And the assortment tool 312 is employed to determine an optimum mix of products of a product category comprising a plurality of demand groups. Each of the tools 304, 306, 308, 310, 312 include provisions for determining optimum lever parameters for the maximization of cost-based merchandising figures of merit such as net profit. In one embodiment, the optimization engine 300 comprises computer program modules coded for execution by an optimization analysis program such as GAMS®. The results of an optimization are exported from the application program as tables into a data base server application such as ~~Microsoft~~MICROSOFT® SQL Server.

[0059] Operationally, the transaction logic 402 provides application level message services for the scenario/results processor 402 to receive/transmit messages from/to customer/supplier clients via the web server. In one embodiment, sessions are established via conventional socket calls according to ~~Microsoft~~MICROSOFT® ~~Windows NT~~WINDOWS NT® operating system. The input/output processor 404 directs the acquisition of customer/supplier data to define parameters of an optimization scenario and supplier offers and directs the distribution of scenario results to the customers. The command interpretation logic 406 utilizes a series of scenario configuration templates, or new scenario templates, provided by the template controller 405 to enable a customer to configure parameters of a optimization scenario for execution. The new scenario

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templates, or windows, are stored in the screen templates data set 410, and are populated
with appropriate configuration option data by the command interpretation logic 406. The
input/output processor 404 routes these templates to the transaction logic 402, whereby
the templates are routed to the user client machines over the data network. The command
interpretation logic 406 includes interactive data acquisition logic 408 and file acquisition
logic 407. The interactive data acquisition logic 408 is employed to populate selected
scenario configuration templates with fields/parameters whereby a user interactively
provides data required to configure a scenario or to display the results of an executed
scenario. The file acquisition logic 407 is employed to control the reception of electronic
files from a client machine required to configure a scenario and to control the
transmission of files to export results of an executed scenario to a client machine. The
scenario attributes format data set 409 describes the format requirements for product
attribute data so that data received by the command interpretation logic 406 can be
manipulated into formats that comport with each of the optimization tools 304, 306, 308,
310, 312 described with reference to FIGURE 3.

[0092] In addition, the present invention has been particularly characterized in terms of a
servers, controllers, and management logic for optimization of various merchandising
parameters. These elements of the present invention can also be embodied as application
program modules that are executed on a ~~Windows-~~WINDOWS NT®- ~~or Unix~~or UNIX®-
based operating system.